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Nonconformal schemes of the finite-element method for nonlinear hyperbolic conservation laws

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Abstract

We suggest a method for constructing grid schemes for initial-boundary value problems for many-dimensional nonlinear systems of first-order equations of hyperbolic type on the basis of the Galerkin-Petrov limit approximation to the mixed statement of an original problem. Our grid schemes are versions of the nonconformal finite-element method in which the approximate solution is constructed in the space of piecewise polynomial functions that admit discontinuities on the boundary of triangulation elements of the design domain. We prove the convergence of the line method scheme and an implicit two-layer weighted scheme.

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